

What is claimed is:

1. A process for extraction of pollutants from sub-surface water comprising:

(a) introducing an aqueous cyclodextrin solution into a sub-surface area containing water with pollutants;

(b) allowing said aqueous cyclodextrin solution to flow downward through said sub-surface area to form complexes with said pollutants; and

(c) recovering water with said complexes from below where said aqueous solution was introduced into said sub-surface area.

2. The process of claim 1 further comprising:

(d) separating said complex into cyclodextrin and pollutant; and

(e) recycling said cyclodextrin to reintroduce said cyclodextrin into said sub-surface area.

3. The process of claim 1 wherein said cyclodextrin is selected from the group consisting of alpha-cyclodextrin, beta-cyclodextrin, gamma-cyclodextrin, derivatives of cyclodextrins, and mixtures thereof.

4. The process of claim 1 wherein said aqueous cyclodextrin solution has a concentration of about 1% to about 30% by weight solution of cyclodextrin.

5. The process of claim 1 wherein the pollutant is selected from the group of organic and inorganic pollutants.

6. The process of claim 1 wherein a vertical circulating well is used to introduce said aqueous cyclodextrin solution and recover said water and complex.

7. The method of claim 2 wherein said separating is conducted by air stripping said pollutant from said cyclodextrin.

8. The process of claim 1 wherein said pollutant is trichloroethane and said cyclodextrin is hydroxypropylated beta-cyclodextrin.

9. In a process for extracting pollutants from sub-surface water using a vertical circulating well, the improvement comprising:

adding cyclodextrin to water introduced into the well through a diffuser ring so as to recover complexes of cyclodextrin and pollutants from said well at a point below said diffuser ring.

10. The process of claim 9 wherein said cyclodextrin in said water introduced into said well is present in a concentration of about 1% to about 30% by weight of mixture of water and cyclodextrin.

11. The process of claim 9 further comprising separating said recovered complex into cyclodextrin and pollutant, and recycling said cyclodextrin.

12. The process of claim 9 wherein said cyclodextrin is selected from the group consisting of alpha-cyclodextrin, beta-cyclodextrin, gamma-cyclodextrin, derivatives of cyclodextrin, and mixtures thereof.

13. A process for extraction of trichloroethene from an aquifer comprising:

(a) forming a vertical circulating well in a sub-surface area polluted with trichloroethene;

(b) introducing an aqueous hydroxypropylated beta-cyclodextrin solution into said sub-surface area with a diffuser ring of said well;

(c) allowing said solution to flow downward through said sub-surface area to form complexes between said cyclodextrin and said trichloroethene;

(d) recovering water at the bottom of said well with said complexes therein;

(e) separating said complex by air stripping into cyclodextrin and trichloroethene; and

(f) recycling cyclodextrin after separation from the complex back to step (b).